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EXAMINER	
WONG, ALLEN C	
ART UNIT	**PAPER NUMBER**
2621	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	09/338,176	SHUM ET AL.
	Examiner	**Art Unit**
	Allen Wong	2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-9,11-16 and 18-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-9,11-16 and 18-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 12/8/06 have been fully read and considered but they are not persuasive.

The 35 U.S.C. 112 rejection is withdrawn after the amendment to claim 36.

Regarding pages 12-14 of applicant's remarks about claim 37, applicant asserts that that limitations of "means for calculating a partial model for each segment…", "means for extracting virtual key frames…", and "the three-dimensional coordinates and camera pose being derived from the frames of the segment" are not disclosed in Jain. The examiner respectfully disagrees. In figure 12, Jain discloses there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model. In column 21, line 63 to column 22, line 7, Jain discloses the obtaining of the feature points within the frames. In column 22, line 62 to column 23, line 56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection". Thus, Jain discloses the "means for calculating a partial model for each segment…" In column 23, line 58 to column 24, line 3, Jain discloses the extraction of key frames by selecting one key frame from every 30 frames in that every 30 frames can be considered a segment of a sequence of frames. Thus, Jain discloses the "means for extracting virtual key frames…"

As for the “the three-dimensional coordinates and camera pose being derived from the frames of the segment”, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames. And in fig.12, Jain discloses there are multiple “image to ground projection” sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model. In column 21, line 63 to column 22, line 7, Jain discloses the obtaining of the feature points within the frames. Jain’s column 22, line 62 to column 23, line 56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a “image to ground projection”.

Thus, claim 37 is met by Jain.

Regarding page 14-17 of applicant’s remarks, applicant states that the combination of Jain and Lee is improper for claims 1,2, 4-9, 11-16 and 18-36. The examiner respectfully disagrees. The test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). It has been held that a prior art reference must either be in the field of applicant’s endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). The examiner recognizes that obviousness can only

be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner, as disclosed in Lee's column 2, lines 60-64.

Regarding pages 17-19 of applicant's remarks about claim 1, applicant states that Jain and Lee does not disclose "dividing the sequence of frames into frame segments wherein the frames... wherein the sequence of frames is divided into frame segments based upon frames in each frame segment having at least a minimum number of feature points being tracked to at least one base frame in the frame segment." The examiner respectfully disagrees. In figure 8, Jain discloses that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a frame segment. In this case, camera 1 has approximately 14 segments, thus, Jain discloses the division of the sequence of images into segments. Also, in column 23, line 58 to column 24, line 3, Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames.

Clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames. And in fig.12, Jain discloses there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model. In column 21, line 63 to column 22, line 7, Jain discloses the obtaining of the feature points within the frames. Jain's column 22, line 62 to column 23, line 56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection". Jain does not specifically disclose the determining at least a minimum number of feature points being tracked. However, in column 2, line 65 to column 3, line 31, Lee teaches the use of threshold values TH and comparison of threshold values of feature points between the current frame and the reference frame to check if the threshold is exceeded, thus, there is a minimum number of feature points that is determined. Thus, Lee teaches the determining at least a minimum number of feature points being tracked. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner, as disclosed in Lee's column 2, lines 60-64.

Regarding page 19 of applicant's remarks, applicant states that dependent claims 2 and 4-8 are not disclosed by Jain and Lee. The examiner respectfully disagrees. Dependent claims 2 and 4-8 are rejected for at least similar reasons as claim 1 as stated in the above paragraphs and in the rejection below.

Regarding pages 19-21 of applicant's remarks about claim 9, applicant contends that Jain and Lee do not disclose "a method of recovering a three-dimensional scene from two-dimensional images, the method comprising... dividing the sequence of frames into segments,... for each segment, encoding the frames in the segment into at least two virtual frames that include a three-dimensional structure for the segment and an uncertainty associated with the segment... for each of the at least two chosen frames, projecting a plurality of three-dimensional points into a corresponding virtual frame; and for each of the at least two chosen frames, projecting an uncertainty into the corresponding virtual frame". The examiner respectfully disagrees.

In figure 8, Jain discloses that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a frame segment. In this case, camera 1 has approximately 14 segments, thus, Jain discloses the division of the sequence of images into segments. Also, in column 23, line 58 to column 24, line 3, Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames. Thus, Jain discloses "dividing the sequence of frames into segments..."

As stated in the above paragraphs and in the below rejection, in column 2, line 65 to column 3, line 31, Lee teaches the use of threshold values TH and comparison of threshold values of feature points between the current frame and the reference frame to check if the threshold is exceeded, thus, permitting the calculation of percentages of feature points in the base or current frame. Thus, Lee teaches a segment has at least a predetermined percentage of feature points identified in the base frame. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner, as disclosed in Lee's column 2, lines 60-64.

Clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames. And in fig.12, Jain discloses there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model. In column 21, line 63 to column 22, line 7, Jain discloses the obtaining of the feature points within the frames. Jain's column 22, line 62 to column 23, line 56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection".

In column 23, line 58 to column 24, line 3, Jain discloses the extraction of virtual key frames by selecting one key frame from every 30 frames in that every 30 frames can be considered a segment of a sequence of frames. In column 24, lines 38-67, Jain discloses the virtual key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from virtual key frames, thus, segmented frames are encoded into at least two virtual key frames to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization. Thus, the combination of Jain and Lee discloses "dividing the sequence of frames into segments..." The limitation of "encoding the frames in the segment into at least two virtual frames... choosing at least two frames..." has already been addressed in the above paragraphs and in the rejection below. Peruse the above paragraphs and the rejection below.

Dependent claims 11-16 and 18-22 are rejected for at least similar reasons as claim 9.

Regarding pages 21-23 of applicant's remarks about claim 23, applicant argues that Jain and Lee, individually or in combination, does not disclose "determining a number of the selected feature points... and if the number of the selected feature points from the base frame that are also identified in the next frame is greater than or equal to a threshold number... adding the next frame..." The examiner respectfully disagrees. In column 2, line 65 to column 3, line 31, Lee teaches the use of threshold values TH and comparison of threshold values of feature points between the current frame and the

reference frame to check if the threshold is exceeded, thus, permitting the calculation of percentages of feature points in the base or current frame. Thus, Lee teaches the determining the number of selected feature points from the base frame that are also identified in the next frame is greater than or equal to a threshold number. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner, as disclosed in column 2, lines 60-64.

Regarding page 24 of applicant's remarks, applicant argues that claims 24-30 are not disclosed by the combination of Jain and Lee. The examiner respectfully disagrees. Dependent claims 24-30 are rejected for at least similar reasons as stated for claim 23 in the above paragraph and the rejection below.

Regarding pages 24-26 of applicant remarks about claim 31, applicant contends that claim 31 is not disclosed by the combination of Jain and Lee, and that "dividing the long sequence into segments includes identifying a base frame and tracking feature points... a predetermined threshold of feature points that are contained in the base frame". The examiner respectfully disagrees. The limitations of claim 31 are similar to claims 1 and 23, and therefore, the issues of the claim 31 has already been addressed in the above previous paragraphs and in the rejection below. Peruse above and the rejection below.

Dependent claims 32-35 are rejected for at least similar reasons as claim 31 as previously stated in the above paragraphs and in the rejection below.

Regarding pages 26-27 of applicant's remarks about claim 36, applicant states that Jain does not disclose the limitation "calculating a partial model for each segment, wherein the partial model includes the same number of frames as the segment it represents... extracting virtual key frames from each partial model... and bundle adjusting the virtual key frames...obtain a complete three-dimensional reconstruction of the two dimensional frames." The examiner respectfully disagrees. In fig.12, Jain discloses there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model. In column 21, line 63 to column 22, line 7, Jain discloses the obtaining of the feature points within the frames. In column 22, line 62 to column 23, line 56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection" and that the camera pose does contain rotation and translation, as illustrated by discussion of angle and use of three-dimensional coordinates for obtaining rotation and translation. Thus, the "calculating" limitation is met.

In column 23, line 58 to column 24, line 3, Jain discloses the extraction of key frames by selecting one key frame from every 30 frames in that every 30 frames can be considered a segment of a sequence of frames. Also, in column 24, lines 38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known

points, ie. uncertainty, from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization. Thus, the "extracting" limitation is met.

In figure 12, Jain discloses the "3D visualization" section is the product of the adjusting of the virtual key frames to produce a complete three-dimensional reconstruction of the two dimensional frames obtained by video camera 1 to video camera N. Also, in column 24, lines 38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization. Thus, the "bundle adjusting" limitation is met.

Jain does not disclose the determination of the partial model including same number of frames as the segment it represents. However, in column 2, line 65 to column 3, line 31, Lee teaches the use of threshold values TH and comparison of threshold values of feature points between the current frame and the reference frame to check if the threshold is exceeded, thus, a comparison is done to see if the partial model includes the same number of frames as the segment it represents. Thus, Lee discloses the determination of the partial model including same number of frames as the segment it represents. Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of

feature points according to the motion of objects in a financially robust manner, as disclosed in Lee's column 2, lines 60-64.

In conclusion, the rejection of the claims is maintained.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 37 is rejected under 35 U.S.C. 102(b) as being anticipated by Jain et al (5,729,471).

Regarding claim 37, Jain discloses an apparatus for recovering a three-dimensional scene from a sequence of two-dimensional frames by segmenting the frames, comprising:

means for capturing two-dimensional images (fig.12, note camera 1 obtain video images in two-dimensional form; also see fig.8, note camera 1 obtains a sequence of two-dimensional images, and cameras 2 and 3 also obtain a corresponding sequence of images; col.22, ln.1-3);

means for dividing the sequence into segments (fig.8, note that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a segment, so in this case, camera 1 has approximately 14 segments, thus,

Jain discloses the division of the sequence of images into segments; also, in col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames, clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames);

means for calculating a partial model for each segment that includes three-dimensional coordinates and camera pose for features within the frames of the segment, the three-dimensional coordinates and camera pose being derived from the frames of the segment (fig.12, note there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection");

means for extracting virtual key frames from each partial model (col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames in that every 30 frames can be considered a segment of a sequence of frames); and

means for bundle adjusting the virtual key frames to obtain a complete three-dimensional reconstruction of the two-dimensional frames (fig.12, note the "3D visualization" section is the product of the adjusting of the virtual key frames to produce a complete three-dimensional reconstruction of the two dimensional frames obtained by video camera 1 to video camera N; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, 4-9, 11-16 and 18-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jain et al (5,729,471) in view of Lee (5,612,743).

Regarding claim 1, Jain discloses a method of recovering a three-dimensional scene from two-dimensional images, the method comprising:

providing a sequence of frames (fig.12, note camera 1 obtain video images in two-dimensional form; also see fig.8, note camera 1 obtains a sequence of two-

dimensional images, and cameras 2 and 3 also obtain a corresponding sequence of images; col.22, ln.1-3);

dividing the sequence of frames into frame segments wherein the frames in the sequence comprise feature points and wherein the sequence of frames is divided into frame segments (fig.8, note that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a frame segment, so in this case, camera 1 has approximately 14 segments, thus, Jain discloses the division of the sequence of images into segments; also, in col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames, clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames; also fig.12, note there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection");

performing three-dimensional reconstruction individually for each frame segment derived by dividing the sequence of frames (fig.12, note there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection"); and

combining the three-dimensional reconstructed segments together to recover a three-dimensional scene for the sequence of images (fig.12, note the "3D visualization" section is the product of the adjusting of the virtual key frames to produce a complete three-dimensional reconstruction of the two dimensional frames obtained by video camera 1 to video camera N; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Jain does not specifically disclose the determining at least a minimum number of feature points being tracked. However, Lee teaches the determining at least a minimum number of feature points being tracked (col.2, ln.65 to col.3, ln.31; Lee teaches the use

of threshold values TH and comparison of threshold values of feature points between the current frame and the reference frame to check if the threshold is exceeded, thus, there is a minimum number of feature points that is determined). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner (col.2, ln.60-64).

Regarding claim 2, Jain discloses the use of virtual key frames (col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames).

Regarding claim 4, Jain discloses the performance of a two-frame structure from motion algorithm on each of the segments to create a partial model (fig.12, note there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection"); and eliminating ambiguity (col.24, ln.38-67, Jain discloses the virtual key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known

points, ie. uncertainty, from virtual key frames, thus, segmented frames are encoded into at least two virtual key frames to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Regarding claims 5 and 7, Jain discloses extracting virtual key frames (col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames in that every 30 frames can be considered a segment of a sequence of frames; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization) and bundle adjustment of key frames (fig.12, note the "3D visualization" section is the product of the adjusting of the virtual key frames to produce a complete three-dimensional reconstruction of the two dimensional frames obtained by video camera 1 to video camera N; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Regarding claim 6, Jain discloses identify feature points, estimating three dimensional coordinates, and estimating camera rotation and translation (fig.12, note

there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection").

Regarding claim 8, Jain discloses the use of a computer-readable medium to execute instructions for performing the method of claim 1 (col.15, ln.65-67).

Regarding claims 9 and 21, discloses a method of recovering a three-dimensional scene from two-dimensional images, the method comprising:

identifying a sequence of two-dimensional frames that include two-dimensional images (fig.12, note camera 1 obtain video images in two-dimensional form; also see fig.8, note camera 1 obtains a sequence of two-dimensional images, and cameras 2 and 3 also obtain a corresponding sequence of images; col.22, ln.1-3);

dividing the sequence of images into segments, wherein a segment includes a plurality of frames (fig.8, note that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a segment, so in this case, camera 1 has approximately 14 segments, thus, Jain discloses the division of the sequence of images into segments; also, in col.23, ln.58 to col.24, ln.3; Jain discloses

the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames, clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames) and wherein dividing includes, identifying the base frame, identifying the feature points in the base frame, and defining the segments (col.21, ln.63 to col.22, ln.7; Jain discloses the identification of feature points in the plural frames that includes the first base frame in the segments from the sequence of images);

for each segment, encoding the frames in the segment into at least two virtual frames that include a three-dimensional structure for the segment and an uncertainty associated with the segment and wherein encoding includes choosing at least two frames (col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of virtual key frames by selecting one key frame from every 30 frames in that every 30 frames can be considered a segment of a sequence of frames; also, col.24, ln.38-67, Jain discloses the virtual key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from virtual key frames, thus, segmented frames are encoded into at least two virtual key frames to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization);

projecting a plurality of three dimensional points into a corresponding virtual frame (also, col.24, ln.38-67, Jain discloses the virtual key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that

if there is not enough known points, ie. uncertainty, from virtual key frames, thus, segmented frames are encoded into at least two virtual key frames to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization); and

projecting an uncertainty into the corresponding virtual frame (also, col.24, ln.38-67, Jain discloses the virtual key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from virtual key frames, thus, segmented frames are encoded into at least two virtual key frames to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Jain does not specifically disclose determining the segments such that every frame in a segment has at least a predetermined percentage of feature points identified in the base frame. However, Lee teaches a segment has at least a predetermined percentage of feature points identified in the base frame (col.2, ln.65 to col.3, ln.31; Lee teaches the use of threshold values TH and comparison of threshold values of feature points between the current frame and the reference frame to check if the threshold is exceeded, thus, permitting the calculation of percentages of feature points in the base or current frame). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner (col.2, ln.60-64).

Regarding claim 11, Jain discloses the variation of segments and variation of frames (fig.8, note camera 1 has multiple 413 frames in approximately 13 seconds, where each segment has 30 frames to obtain approximately 13 segments from camera 1, whereas camera 2 has 181 frames in 6 seconds, or approximately 6 segments from camera 2, etc.).

Regarding claim 12, Jain discloses identify feature points, estimating three dimensional coordinates, and estimating camera rotation and translation (fig.12, note there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection").

Regarding claims 13-16, Jain discloses the performance of a two-frame structure from motion algorithm on each of the segments to create a partial model (fig.12, note there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature

points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection"); and eliminating ambiguity (col.24, ln.38-67, Jain discloses the virtual key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from virtual key frames, thus, segmented frames are encoded into at least two virtual key frames to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Regarding claim 18, Jain discloses extracting virtual key frames (col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames in that every 30 frames can be considered a segment of a sequence of frames; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization) and bundle adjustment of key frames (fig.12, note the "3D visualization" section is the product of the adjusting of the virtual key frames to produce a complete three-dimensional reconstruction of the two dimensional frames obtained by video camera 1 to video camera N; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not

enough known points from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Regarding claim 19, Jain discloses performing motion estimation to identify feature points (col.21, ln.63 to col.22, ln.7).

Regarding claim 20, Jain does not specifically disclose creating a template block in a first frame, creating a search window used in the second frame, and comparing an intensity difference between the search window and the template block to locate the feature point in the second frame. However, Lee teaches that creating a template block in a first frame, creating a search window used in the second frame, and comparing an intensity difference between the search window and the template block to locate the feature point in the second frame (fig.4, note frame A and frame B are the first and second frames, note fig.3, element 313 also discloses the comparison process to compare differences to determine or locate the feature point in the second frame). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner (col.2, ln.60-64).

Regarding claim 22, Jain discloses the use of a computer-readable medium to execute instructions for performing the method of claim 9 (col.15, ln.65-67).

Regarding claims 23, 24 and 28, Jain discloses a method of recovering a three-dimensional scene from a sequence of two-dimensional frames, comprising:

identifying at least a first base frame in a sequence of two dimensional frames (fig.12, note camera 1 obtain video images in two-dimensional form; also see fig.8, note camera 1 obtains a sequence of two-dimensional images, and cameras 2 and 3 also obtain a corresponding sequence of images; see col.22, ln.1-3; fig.8, note that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a segment, so in this case, camera 1 has approximately 14 segments, thus, Jain discloses the division of the sequence of images into segments; also, in col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames, clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames);

adding the at least first base frame to create a first segment of frames of the sequence (fig.8, note that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a frame segment, so in this case, camera 1 has approximately 14 frame segments, so a first segment of the sequence is created);

selecting feature points in at least a first base frame in a first segment of frames in the sequence (col.21, ln.63 to col.22, ln.7; Jain discloses the identification and selection of feature points in the plural frames that includes the first base frame); and

analyzing a second frame in the segment to identify the feature points in the second frame (col.21, ln.63 to col.22, ln.7; Jain discloses the identification of feature points in each frame from a plurality of frames that includes the second frame).

Jain does not specifically disclose the adding the second frame to the segment. However, Jain discloses the manual adjustment of the number of key frames, where the number is one key frame for every thirty frames, ie. a segment (col.23, ln.64 to col.24, ln.3). Therefore, since Jain teaches the manual adjustment of one key frame or representative frame for every thirty frames, it would have been obvious to one of ordinary skill in the art to manually change the number of key (representative) frames per segment from anywhere between two to five key or representative frames per segment if necessary for accurately enhancing the three-dimensional representation of the targeted scene.

Jain does not specifically disclose the determining the number of selected feature points from the base frame that are also identified in the next frame is greater than or equal to a threshold number. However, Lee teaches the determining the number of selected feature points from the base frame that are also identified in the next frame is greater than or equal to a threshold number (col.2, ln.65 to col.3, ln.31; Lee teaches the use of threshold values TH and comparison of threshold values of feature points between the current frame and the reference frame to check if the threshold is exceeded, thus, permitting the calculation of percentages of feature points in the base or current frame). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of

video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner (col.2, ln.60-64).

Regarding claim 25, Jain discloses performing motion estimation to identify feature points (col.21, ln.63 to col.22, ln.7).

Regarding claim 26, Jain discloses the identification of corners as feature points (col.22, ln.15-22; note the disclosure of borders, hashlines, marks are feature points to create corners as to determine camera status and pose).

Regarding claim 27, Jain discloses the number of frames can vary between segments (col.23, ln.64 to col.24, ln.3).

Regarding claim 29, Jain discloses the bundle adjustment of key frames (fig.12, note the "3D visualization" section is the product of the adjusting of the virtual key frames to produce a complete three-dimensional reconstruction of the two dimensional frames obtained by video camera 1 to video camera N; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Regarding claim 30, Jain discloses the use of a computer-readable medium to execute instructions for performing the method of claim 23 (col.15, ln.65-67).

Regarding claim 31, Jain discloses a method of recovering a three-dimensional scene from a sequence of two-dimensional frames (fig.12), an improvement comprising:

dividing a long sequence of frames into segments (fig.8, note that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a segment, so in this case, camera 1 has approximately 14 segments, thus, Jain discloses the division of the sequence of images into segments; also, in col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames, clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames),

wherein the representative frames are used to recover the three-dimensional scene and remaining frames are discarded so that three-dimensional scene is effectively compressed (col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of virtual key frames by selecting one key frame from every 30 frames in that every 30 frames can be considered a segment of a sequence of frames; also, col.24, ln.38-67, Jain discloses the virtual key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from virtual key frames, thus, segmented frames are encoded into at least two virtual key frames to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization, the excess remaining frames are discarded),

wherein dividing the long sequence into segments includes identifying a base frame and tracking feature points between frames in the sequence (col.21, ln.63 to col.22, ln.7; Jain discloses the identification of feature points in the plural frames that includes the first base frame in the segments from the sequence of images).

Jain does not specifically disclose the reducing the number of frames in each segment by representing the segments using between two and five representative frames per segment. However, Jain discloses the manual adjustment of the number of key frames, where the number is one key frame for every thirty frames, ie. a segment (col.23, ln.64 to col.24, ln.3). Therefore, since Jain teaches the manual adjustment of one key frame or representative frame for every thirty frames, it would have been obvious to one of ordinary skill in the art to manually change the number of key (representative) frames per segment from anywhere between two to five key or representative frames per segment if necessary for accurately enhancing the three-dimensional representation of the targeted scene.

Jain does not disclose a predetermined threshold of feature points that are contained in the base frame. However, Lee teaches the predetermined threshold of feature points that are contained in the base frame (col.2, ln.65 to col.3, ln.31; Lee teaches the use of threshold values TH and comparison of threshold values of feature points between the current frame and the reference frame to check if the threshold is exceeded). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video

image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner (col.2, ln.60-64).

Regarding claim 32, Jain discloses that each representative frame have an associated uncertainty (col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Regarding claim 33, Jain discloses the long sequence of frames includes over 75 frames (fig.8, note that camera 1 obtains a sequence of 412 frames, which clearly is over 75 frames).

Regarding claim 34, Jain discloses the division of the long sequence into segments and tracking feature points (fig.8, note that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a segment, so in this case, camera 1 has approximately 14 segments, thus, Jain discloses the division of the sequence of images into segments; also, in col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames, clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a

sequence of 30 frames; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames).

Regarding claim 35, Jain discloses the performance of a two-frame structure from motion algorithm on each of the segments to create a partial model (fig.12, note there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection").

Regarding claim 36, Jain discloses a computer-readable medium having computer-executable instructions for performing a method comprising:

providing a sequence of two-dimensional frames (fig.12, note camera 1 obtain video images in two-dimensional form; also see fig.8, note camera 1 obtains a sequence of two-dimensional images, and cameras 2 and 3 also obtain a corresponding sequence of images; col.22, ln.1-3);

dividing the sequence into segments (fig.8, note that camera 1 obtains a sequence of 412 frames for approximately 13 seconds, and that every 30 frames obtained for each second, ie. the standard NTSC frame rate (30 frames/sec), can be considered a segment, so in this case, camera 1 has approximately 14 segments, thus,

Jain discloses the division of the sequence of images into segments; also, in col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames, ie. a segment of a sequence of frames, clearly, Jain discloses there are segments within a sequence of frames, otherwise, the ascertainment of key frames would not be possible without these segments, where each segment is formed from a sequence of 30 frames);

calculating a partial model for each segment that includes three-dimensional coordinates and camera pose for features within the frames, the camera pose comprising rotation and translation (fig.12, note there are multiple "image to ground projection" sections that are used to calculate and project an image or a partial model for each segment of that includes three-dimensional occupancy estimation for which a 3D map of is generated in an attempt to form a dynamic model; col.21, ln.63 to col.22, ln.7, Jain discloses the obtaining of the feature points within the frames; col.22, ln.62 to col.23, ln.56, Jain discloses the use of equations that includes three dimensional coordinates (x, y, z) that includes camera position or pose, camera angle and camera parameter to obtain a partial model or a "image to ground projection" and that the camera pose does contain rotation and translation, as illustrated by discussion of angle and use of three-dimensional coordinates for obtaining rotation and translation);

extracting virtual key frames from each partial model, the virtual key frames having three-dimensional coordinates for the frames and an uncertainty associated with the frames (col.23, ln.58 to col.24, ln.3; Jain discloses the extraction of key frames by selecting one key frame from every 30 frames in that every 30 frames can be

considered a segment of a sequence of frames; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points, ie. uncertainty, from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization); and

bundle adjusting the virtual key frames to obtain a complete three-dimensional reconstruction of the two-dimensional frames (fig.12, note the "3D visualization" section is the product of the adjusting of the virtual key frames to produce a complete three-dimensional reconstruction of the two dimensional frames obtained by video camera 1 to video camera N; also, col.24, ln.38-67, Jain discloses the key frames are used to obtain the best possible three-dimensional reconstruction of the two-dimensional frame data in that if there is not enough known points from key frames, estimates or bundle adjustments were made to ascertain the best, possible three-dimensional reconstruction of the two-dimensional frame data to yield the 3D visualization).

Jain does not disclose the determination of the partial model including same number of frames as the segment said partial model represents. However, Lee discloses the determination of the partial model including same number of frames as the segment it represents (col.2, ln.65 to col.3, ln.31; Lee teaches the use of threshold values TH and comparison of threshold values of feature points between the current frame and the reference frame to check if the threshold is exceeded, thus, a comparison is done to see if the partial model includes the same number of frames as the segment

it represents). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Jain and Lee, as a whole, for improving the encoding of video image data so as to accurately encode images via the selection of feature points according to the motion of objects in a financially robust manner (col.2, ln.60-64).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen Wong whose telephone number is (571) 272-7341. The examiner can normally be reached on Mondays to Thursdays from 8am-6pm Flextime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Groody can be reached on (571) 272-7418. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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